

## Claims

1. Device for measurement of the rotational angle of two components that can be rotated relative to each other, with a shaft (30, 33) that can be coupled to rotate in unison with the first component (50), with a materialized measure (10) connected coaxially and rotating in unison with shaft (30, 33), and with a sensing device (20) that optically senses the materialized measure (10) connected to rotate in unison with the second component (51),

characterized by the fact that the materialized measure (10) has an angular lattice structure (12), that the sensing device (20) has a circular track of optical sensor elements (21) spaced apart at an angle and arranged coaxially to shaft (30, 33), that a marker element (13) connected to rotate in unison with shaft (30, 33) influences the light impinging on sensor elements (21) according to its angular position for at least one sensor element (21) associated with this angular position, and that the sensor elements (21) can be electronically polled individually.

2. Device according to Claim 1, characterized by the fact that a light source (31) is arranged coaxially in shafts (30, 33), that the light source (31) illuminates the materialized measure (10), and that the sensing device (20) is arranged on the side of the materialized measure (10) opposite light source (31).

3. Device according to Claim 1 or 2, characterized by the fact that the marker element (13) and the materialized measure (10) are formed on a common disk (11).

4. Device according to Claim 3, characterized by the fact that the materialized measure (10) has an angular lattice structure (12) with equidistant angle division and the marker element (13) is formed by an irregularity of this angle division.

5. Device according to one of the preceding claims, characterized by the fact that at least a second marker element (14) is provided, which is arranged offset at an angle relative to the first marker element (13).

6. Device according to Claim 5, characterized by the fact that the marker elements (13, 14) are offset relative to each other at an angle different from 180° that preferably lies close to 180°.

7. Device according to one of the preceding claims, characterized by the fact that the materialized measure (10) generates in the optical sensor elements (21) at least an incrementally counted sine signal and a cosine signal phase-shifted by 90° relative to it.

8. Device according to Claim 7, characterized by the fact the signals generated by the materialized measure (10) in the optical sensor elements (21) are sensed at angular positions of the circular track which are offset relative to each other by 90°.

9. Device according to one of the preceding claims, characterized by the fact that the sensor elements (21) are individually polled by a multiplex circuit (24).

10. Device according to one of the preceding claims, characterized by the fact that the shaft is insertable with a shaft stub (33) coaxially into the first component (50).

11. Device according to Claim 10, characterized by the fact that the shaft stub (33) can be inserted axially alignable in the first component (50).

12. Device according to Claim 11, characterized by the fact that the shaft stub (33) is designed as an expanding shaft and is inserted with a force-fit into a blind hole (53) of the first component (50).

13. Device according to Claim 11 or 12, characterized by the fact that the sensing device (20) is arranged in a cap (40) mountable on the second component (51), and that the shaft (30, 33) with the materialized measure (10) is pressed into the first component (50) and is axially aligned by means of tool (60) corresponding to this cap (40).

14. Device according to one of the preceding claims, characterized by the fact that the first component is the motor shaft (50) of a motor and the second component is the motor housing (51) of the motor.